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WHEELER

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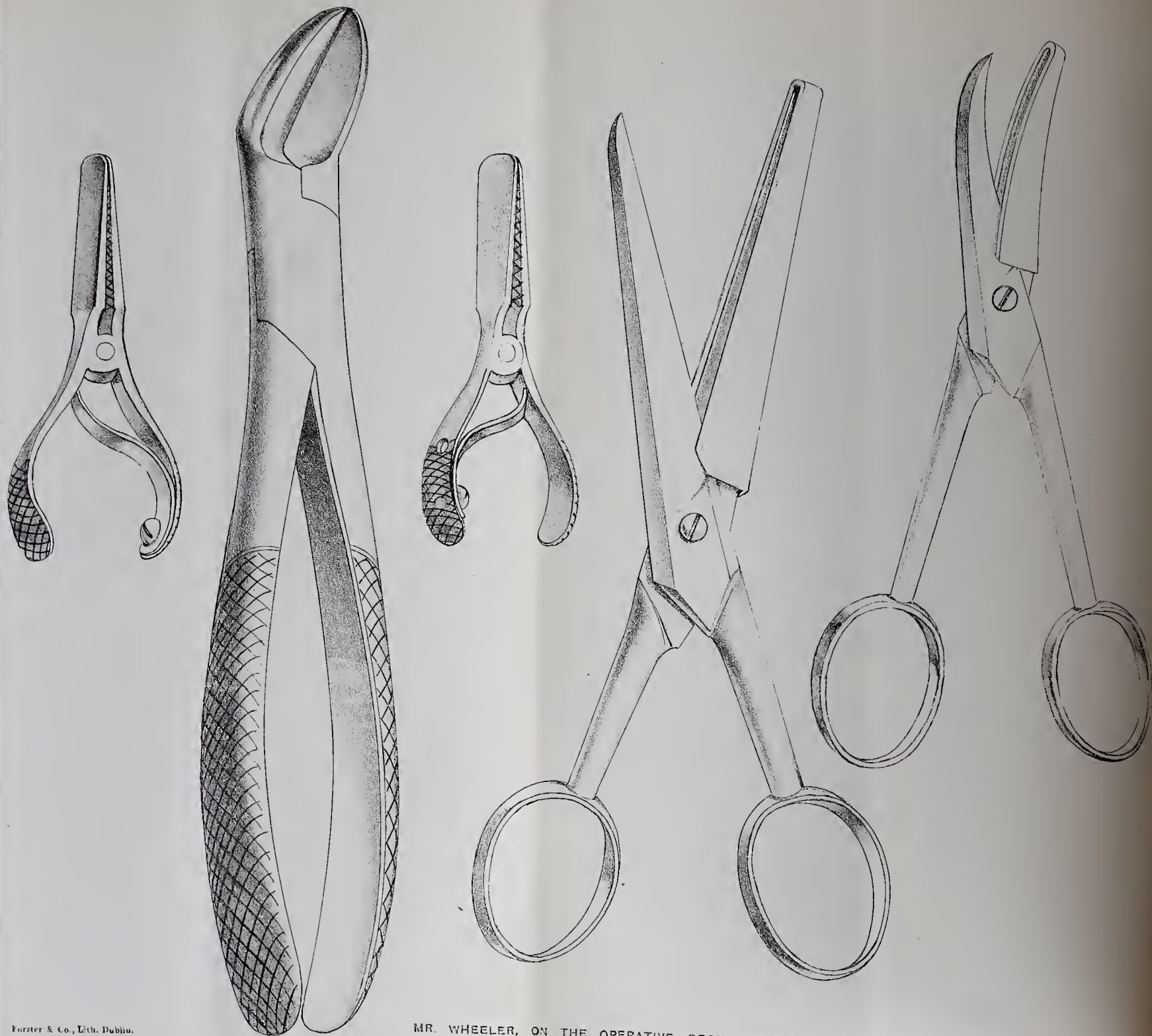
OPERATIVE TREATMENT

OF

HARE-LIP.

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MR. WHEELER, ON THE OPERATIVE REQUIREMENTS AND TREATMENT
FOR THE CURE OF HARE LIP.

With five Woodcuts

(Compliments)

ON THE

OPERATIVE TREATMENT

OF

H A R E - L I P .

BY

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SURGEON AND LECTURER ON CLINICAL AND OPERATIVE SURGERY TO THE CITY OF
DUBLIN HOSPITAL.

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D U B L I N :

PRINTED FOR THE AUTHOR,

BY JOHN FALCONER, 53, UPPER SACKVILLE-STREET.

1880.

ON THE

OPERATIVE TREATMENT OF HARE-LIP.

As unusually large numbers of cases of deformity of the face have come under my care, the subject has received my especial attention. I purpose, therefore, in this paper to relate some of my experience, but intend to restrict myself to the description of that congenital deformity known as hare-lip (or *Labium Leporinum*)—detailing from the single or unilateral kind to the double or bilateral, with the most aggravated complications—relating the most interesting selected from a large number, all successfully operated on, where life was preserved, and the distorted parts placed in their normal position by operative interference and surgical skill.

I do not purpose entering into any lengthened prefatory discourse on the development of the face—such would be unsuitable to this my paper, and can be read in the elaborate descriptions of various writers, as Kölliker, Dr. J. Hamy, Professor Weber, M. Costa, Mr. Callender, Reichert, &c.—but I will only give such an epitome of the development of the parts implicated in the various forms of hare-lip as will make the origin of the deformities and the operative procedure for their restoration more intelligible and more interesting to those who may not have specially turned their attention to embryology.

Taking it for granted that my readers know that the different parts of the jaw arches, and hyoid apparatus arise in the form of lateral bars or processes beneath and in front of the axis of the cranium, we need only, for our present purpose, confine our attention to those parts of the visceral arch apparatus which contribute to the outward form of the face. These we find to be the foremost two of the paired lateral processes connected with the first visceral

arch, together with one median unpaired process; the former are known as the upper and lower maxillary processes, the latter as the nasal process. This median portion is really the expanded continuation forwards of the axial part of skull basis, which extends in the mesial line as the cartilaginous septum of the nostrils, and lies below the anterior cerebral vesicle. This median process is at first broad and thick, and becomes modified into its well-known permanent condition of a thin median lamella. The foremost part of this septum extends into the face, appearing in the region of the premaxilla as a broad projection notched in the middle, on whose sides arise the bony lamellæ of the vomer; and, according to Mr. Callender, the premaxillary bones are also developed in the membrane which covers the anterior part of this internasal cartilage.^a The front border of this middle process is the internal nasal process, which limits internally the external opening of the nostril. From the side wall of the base of the skull there is continued downwards the external nasal process, in which the different parts of the outer wall of the nasal passages develop, and whose foremost part forms the cartilaginous and other structures of the nasal alæ, and this, blending with the internal frontal process over the nostrils, completely roofs in the anterior nasal opening.

The maxillary process connected with the first post-oral visceral arch projects forwards, beneath the site of invagination of the eye vesicle, and approximates to the outside of the external nasal process with which it unites, leaving between them the nasal duct.^b At first this maxillary process is but a moderately slender bar lying external to the combined mouth and nose cavity; by degrees its under-edge grows inwards beneath the lateral nasal process, and gradually approaching the under-edge of the middle or septal nasal process, with which it finally coalesces, thus shutting off the two nasal passages from the mouth for which these ingrowing shelves form a roof—the palate; and thus the cavities of smell, which at first were two wide and shallow pits along the roof of the buccal

^a Phil. Trans. 1869.

^b Recent researches have been made on the relationship and mode of origin of this duct by Dr. G. Born, of Breslau. Gegenbaur's Morph. Jahrbuch, 1879. P. 481.

cavity on each side of the middle or septal nasal process, become shut off from the mouth. This process of shutting off begins before the end of the second week, and from about the eighth week these palatal lamellæ blend or coalesce from before backwards, joining with the lower edge of the septum narium.^a In the ninth week the hard palate is completed in the human fœtus, and the lateral soft lamellæ posteriorly, which afterwards form the soft palate, rapidly coalesce, so that by the second half of the third month the velum is formed, and the uvula has appeared.

The nasal bones arise as splints on the front part of the skull above the union of the internal and external nasal processes; the lachrymals cover the space above the union of the maxillary and external nasal processes, and these ossify at the beginning of the third month, thus being, as it were, marginal splints of the ethmoid.

The human premaxillæ arise, as has been already stated, as splint bones on each side of the lower part of the middle nasal process, but join very early to the maxillæ, which form as splints on the surface of the maxillary processes. In embryos of the first half of the third month the premaxillæ are separate from the maxillæ, except on the facial surface, where the latter overlap them. During the eleventh and twelfth weeks union proceeds rapidly on the lateral and anterior aspects, so that only a fissure on the palatine side indicates the separation of these bones. This fissure may persist even in adolescent skulls, and may be found widely gaping in the cases of double hare-lip, with the "wolf's pharynx," in which the upper maxillary palatine processes remain separate, not only from the premaxillæ, but from the middle nasal process. And hence the incisor teeth (which develop in the premaxillæ) appear in a median piece of bone attached to the internal nasal process, quite separate from the lateral palatine process of the maxillæ. Mr. Bryant relates an

^a It is interesting to notice that in different animals the degree of blending of these processes medially is a variable one; thus in the human and many other embryos the lateral palatal lamellæ of the superior maxillary process unite with each other below the nasal septum which comes in contact with them above, while in whales the septum which retains its embryonic breadth projects on the roof of the mouth between the two palatal lamellæ.

interesting case, wherein the patient, a child, was suffering from necrosis of the upper jaw. The portions of bone removed proved to be the intermaxillary.^a

From my foregoing epitome it can readily be seen at what an early period of intra-uterine life union should take place between the parts of the mouth, and it can easily be understood that the want of this union of the soft parts covering the intermaxillary bone and that covering the superior maxillæ on one side constitutes single hare-lip—on both sides, double hare-lip; and if the intermaxillary remains ununited, it is usually brought forward by the cartilaginous septum, or the vomer to which it is attached, constituting the double hare-lip, complicated with projecting intermaxillary bone. If the palatal lamellæ do not unite, we have the still further complication of split palate—either the hard palate alone or in part, or the soft palate alone or in part, or both—dependent on the amount of union of the palatine plates.^b Such want of union is then the reason of these varied deformities; but whether these imperfect formations are excited by impressions from without, or an hereditary predisposition, I am not prepared to discuss. I have known several members of the same family to have been the subjects of this affliction. I saw a mother and her infant child both operated on for double hare-lip by Mr. Butcher, in Sir Patrick Dun's Hospital; the cases are reported by him in *The Dublin Journal of Medical Science*, Vol. LXV., May, 1877, p. 403. Mr. Liston operated on four of the same family.^c In *The British Medical Journal* of April, 1863, a writer states that hare-lip has been hereditary in his family for at least a hundred years. Dr. Bellingham describes hereditary cases in *The Dublin Medical Press* of 1855.

^a Path. Soc. Trans. Vol. X.

^b A case of double hare-lip, complicated with protruding intermaxillary bones, and cleft, hard and soft palate, came under my notice a year ago, the tongue being also cleft from near the root, through its entire length and thickness. The child died of convulsions at three weeks old, without operation. This case is exceedingly remarkable, as there is no apparent reason why the tongue should have participated in the fission.

^c Since this paper appeared in the *Dublin Journal*, two cases of hare-lip have been admitted under my care in the City of Dublin Hospital, brother and sister, eight and nine years of age respectively.

I shall now give a brief outline of a few of the cases operated on by me; the Plates have been lithographed by Messrs. Forster, and the deformities and operative results most correctly delineated.

CASE I.—R. D., aged twelve months, an intelligent, handsome, and well-nourished boy (the third child born of healthy parents, who suffered from no deformity whatever), was admitted, under my care, into the City of Dublin Hospital, recommended by my friend, Dr. Trimble, of Castlebellingham, on the 8th May, 1876, suffering from single fissure in the soft parts of the upper lip, on the left, complicated with separation of the intermaxillary bone and superior maxillary of the same side. The nose was widely spread, being more stretched on the right side than on the left; the tip was much depressed; the vomer was not in any way abnormal as to thickness at its nasal extremity. When the child laughed the deformity was immensely increased, and painful to look at—the alæ of the nose spreading considerably over the face, and the fissure in the lip being nearly four times wider than when in the quiescent state.

On the 16th May I proceeded to operate as follows:—The child having been wrapped up in a sheet encircling the body, and which kept its arms closely approximated to its sides, was placed on the lap of an attendant, its head resting against the left breast and shoulder, which an assistant behind steadied, seizing the child with his hands on each side of the skull. I now applied (as is my custom) my arterial spring compressors on each side of the cleft in the lip, as far from the fissure as possible. By this means the coronary arteries were completely controlled, and the operation rendered almost bloodless. And now I rapidly, and with a thin-bladed scalpel, separated the right side of the lip from its attachment to the protruding maxillary bone and the right superior maxillary. I next freed the left side of the lip from its corresponding bony attachments, and with a strong forceps bent the maxillary bone towards the left upper jaw. It came admirably towards its allotted and natural position. Then, raising the gums from the premaxillary process and superior maxillary bone, I stitched them across the narrow osseous slit, and drew their freshened edges together by means of three points of catgut suture. This completely and efficiently filled up the gap in the bony structures. And then, holding the lip in a toothed forceps, I cut off the fissured red margins with my own scissors (seen at Plate 15), the advantages of which I shall hereafter relate. The parts came most

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2. accurately together; but the nose not elevating at the tip, I notched the septal cartilage at its attachment to the vomer, and it at once rose. Now I brought the parts together by means of three fine hare-lip needles, putting in the lower needle first, through all structures save the mucous membrane, entering it about three-quarters of an inch from the edge; and with threads of silk, cast round the needles separately, the parts were brought into beautiful apposition—great care being taken to apply the lower needle so as to guard against the notch forming in the red border.

The arterial compressors were now taken off, and the ends of the needles removed by a cutting pliers. Some small strips of adhesive plaster were carried between the needles, the entire being brushed over with flexible collodion, and a large piece (after the practice of Mr. Butcher) concave forward towards the mouth, attached from one malar bone to the other beneath the chin, the soft parts having been pushed forward towards the mouth before its final adjustment. By these means all the parts were steadied, and the action of the muscles of the face limited. The child was now taken from the operating theatre, and half a grain of pulv. ipecac. c. opio administered with sugar. He soon after fell asleep; and awaking in about an hour and a half, took some heated milk, and quickly went to sleep again.

May 17th.—Doing favourably, the child taking food and sleeping.

On the 19th, seventy-two hours after operation, I removed the needles with a rotatory motion, having first oiled their extremities. The suture remained on the lip, and fresh plaster was applied. On the day after but one I took off all the dressings. The union was perfect. The red margins of the lips could not be more even, so exactly were they adjusted by the manner the lower pin was introduced. The nose was elevated, and ceased to have the disfigured, spread appearance depicted before the operation. The gums had also joined, filling up the space between the bones.

Notwithstanding the accuracy of Plate 1, taken from a photograph, it does not at all portray the immense improvement there was in the child's countenance—before inert and stupid, after the operation expressive and intelligent. He was discharged from hospital on the 3rd June, with scarcely a trace of deformity, less than one month from his admission.



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CASE II.—Esther C., aged three months, residing in a lane near Meath-street, Dublin, was admitted, under my care, into the City of Dublin Hospital, in November, 1875, suffering from single median hare-lip. A heavy, drowsy-looking child, with feeble circulation; much inclined to sleep; her nose was greatly flattened and dragged towards the right side, the septum being slightly displaced in the same direction. When the head was thrown a little back the lips looked enormously thickened, and appeared even more so than they were, on account of the child continually protruding its tongue and pushing the lips outwards.

On investigation I observed this little patient, who had been bottle-fed almost from birth, was suffering from frequent attacks of diarrhoea and aphthous ulceration of the tongue; and immediate operative measures being consequently out of the question, I placed her on constitutional treatment, and regulated the quality and quantity of her nourishment. After a little time she was able to take cod-liver oil and iron. The improvement was slow and gradual, and it was not until the 4th January, 1876, that her health was sufficiently established to operate. Having been rolled in a sheet, as the former case, and steadied by an assistant, I applied the arterial compressors as before mentioned, and detached the soft parts from the maxillary bone, more on the right side than on the left, getting up beyond the right nasal ala. This was necessary to relieve the additional deformity existing on this side. Having liberated these parts sufficiently, I passed the blades of the seissors between the nostril and snipped the septum. I had two objects in this—first, to allow the nose to come towards the left side, and second, to elevate it. Now, seizing the margins of the cleft with a toothed forceps, with my curved sheath-billed seissors I quickly revived the edges. Not a drop of blood came from the coronary arteries, so perfectly were they compressed, nor was any blood lost save that which oozed from those parts separated from the maxilla.

I now drew the edges together, but commenced superiorly—such is the way I have frequently adopted in cases with much nasal deformity and widening—passing the needle from the right about three-quarters of an inch from the edge of entrance, and one-quarter from the side of exit. I was thus enabled by this plan to bring the nose into good position—the soft structures being more separated on the right, as before described, came freely over to the required place.

A second needle was introduced lower down. The third at the lower

border brought the labial edge into beautiful apposition. This needle was entered from left to right, obliquely downwards, as the former, or left edge, was on a slightly higher level than the opposite one. A silken thread was now carried round each needle separately and fastened, narrow strips of plaster over all, and the large encircling piece before described was applied; also a small piece just above and across the end or tip of the nose to control its action, for by being thus set free the pyramidalis nasi and levator labii superioris æque nasi muscles, acting too strongly, pulled greatly on the nose. By this means they were controlled, and the entire was painted over with collodion, a suitable anodyne was administered, the child slept for several hours, and on the 8th of January, ninety-six hours after the operation, I removed the needles and plaster, reapplying the latter over the suture which remained; the piece on the nose was also reapplied. On the 11th all dressings were removed, fibrous material joined the slit in the septum, which enabled the nose to assume its natural position.

Nothing could be more admirable than the manner in which she progressed to a result in which scarcely a trace of deformity was evident. There was no pouting of the lower beyond the upper lip, the red margin was as even as if it had never been fissured, and a narrow line, not more than the width of a hair, alone indicates where the structure amalgamated (*vide* Plate 2). On the 14th January the child was discharged from hospital.

This form of hare-lip, where the fissure is exactly in the middle, is exceedingly rare, and is the natural state in the animal from which the deformity is called. The late Sir W. Fergusson and Mr. Butcher, whose experiences on this subject are considerable, have not seen mesial fissure. Dupuytren and Cruveilhier think it to be impossible, whereas such a case is described by a Mr. Hazard in the *Medical Times* of 1864. MM. Talin and Dupley relate such cases. Blondin has observed it in the embryo. M. Nélaton saw two such examples in the Museum of Strasburg. Nicati saw a child over two years of age in whose superior lip there was a fissure exactly mesial (*De Leporini Labii Naturâ et Origine*). The one I have just described adds another instance of this unusual form.



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CASE III.—James H., aged five weeks, recommended by my friend, Dr. S. Murdoek, was admitted into the City of Dublin Hospital, under my care, on the 18th June, 1874, suffering from single hare-lip on the right side, complicated with separation of the right maxillary bone.

The right side of nose was terribly drawn down and distorted, as shown in Plate 3, adding much to the deformity. On the 25th of June—the child being rolled in a sheet after the manner of the cases already described, and seated on the lap of an attendant, its head being steadied from behind—I rapidly detached the gum on each side of the cleft, and bending back the bone, which I partially cut by means of the forceps known as Mr. Butcher's, and so graphically described in his "Operative Surgery," I next sutured the edges of the gum with catgut ligature, and quickly with a narrow knife freed the soft parts from their osseous attachments, passing the blade of the knife well up in the right side to set free and allow elevation of the nostril. I next cut the edges of the lips with the scissors, having first applied the arterial compressors, and dexterously brought the cleft together by means of needles and twisted suture, passing in the lower one first about one inch from the edge of the lip, and bringing it out at the other side at the same distance from the margin as that of the entrance. There was a tendency to elevation of the central part of the cleft, so I passed in the other two pins used in this way: I entered one from the left side from below upwards, and the other on the right side from above downwards, decussating one another at the point where there was tendency to elevate. The one on the right side assisting to elevate the nose, silk ligature was carried round the lower pin, bringing the prolabium into exquisitely even apposition, and round the rest from one to the other the same kind of suture was employed, the ligature being used in abundance, so as to press on the part which seemed inclined to raise, and also that a pad, as it were, would be over this point where the plaster could press on it. The ends of the needles were now cut off, one point of interrupted suture was found to be necessary close to the nostril, and the compressors being removed, the entire was painted over with collodion, and narrow strips of plaster drawn across; also a large piece from each malar bone beneath the chin, such as was used in Case II., thus limiting muscular action. A sedative was administered, and the child fell asleep. Nothing could do better than this case; the little patient partook of its nourishment well, and on the fourth evening from the operation, seventy-eight

hours after, I removed the needles, and placed fresh strips of plaster over the ligatures, which remained, as is their wont, and fell off usually at the second dressing. Three weeks after the operation there was scarcely a mark perceptible; a mere line delineated where the joining took place; the nasal ala on the right side raised and corresponded with the left; the gums joined and filled in the open between the bones. The altered appearance of the child, as represented in Plate 3, denotes faithfully the improvement. The boy left hospital on the 24th of July, 1874.

CASE IV.—Richard R., aged six months, was admitted under my care on the 9th October, 1876, recommended by my friend, Mr. Patten, now resident surgeon of the hospital.

He was born of healthy parents, whose previous children were not afflicted with any deformity. This was a handsome boy, with large brilliant eyes, high forehead, and a most animated countenance. He suffered from a division of the upper lip to about half its extent towards the right side, with depression of the right nasal ala. The maxillary bones were completely united, and the gum was perfectly even.

On Saturday, the 14th October, I proceeded to operate after this manner, the child having been rolled in a sheet, and placed on the lap of an attendant, an assistant steadying the head:—

In order to allow the nose to elevate, I first passed up a narrow-bladed knife beneath the lip towards the right side, and separated from their osseous attachments the parts holding depressed the right ala, and carried my knife up and across to the left side, even to the septum narium. By this means I effected my object in getting the nose to rise. I now made a semicircular incision above the separation in the lip, which left a diamond-shaped space, and pulled down this cut portion to form the prolabium (or red margin), and then brought the surfaces of the gap left above into apposition by means of two fine needles, round which a silken ligature was carried as in the figure of 8 or twisted suture, taking care that the lower pin lightly traversed the superior edge of the portion of the fissure pulled down. It is necessary to observe this latter point, or undue protrusion of the marginal portion of the lip will occur at the part where the fissure has been lowered. Two narrow strips of plaster were fitted between the needles and brushed over with collodion; a third held a small pad of lint placed at the right side of the nose. This corrected its depression, before noticed.



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The child was now removed to its ward, and restored to the care of its mother. One-fourth of a grain of Dover's powder being administered, he fell asleep and awakened not for two hours and a-half. He then took milk freely from a bottle, and it was surprising to witness the improvement in his manner of sucking.

The needles were removed on the morning of the 17th, seventy-four hours after operation. The suture, as is usual, remained, and fell off at the next application of plaster on the 18th inst. The result was perfect. No mark whatever could be seen, save the smallest seam where the parts were brought together by the needles. This, I have been informed, is not now visible at all. The nose rose and continued in the position desired for it.

Plate 4 accurately represents the conditions of the child before and after the operation. The latter was taken from a photograph sent to me by its mother. The little patient left hospital on the 23rd October.

The above operation is accredited to M. Nélaton, and is suitable to cases where the cleft does not extend into the nostril. I have also practised it with advantage in a case operated on (not by me) some years ago where a considerable notch remained in the lip.

This method of operating, however, is not suitable for every case where the fissure does not include the entire lip. A case now under my care in the City of Dublin Hospital, a boy of twelve years of age,^a sent to me by Mr. Irwin, a surgical student (now Licentiate of the College of Surgeons), presented the same appearance as that seen in Plate 4; yet the operation just described would have been entirely inapplicable, inasmuch as the connecting medium in the upper undivided portion of the lip was thin and undeveloped, and would not have filled up the space below. The operation—to my mind most exquisite for suitable cases—would much disappoint the operator were he led to perform it in such as I have mentioned. M. Nélaton does not lay down this most important warning in his description. In such cases the undeveloped portion had better be removed, and the curved seissors, as seen in Plate 15, will probably be the best instrument to use; a slight separation of the soft tissues from the bones may be

^a His grandfather, aged sixty years, is the subject of single hare-lip.

necessary. I adopted this course in the boy alluded to; the success was all I could wish for. No attempt should be made to join the lower portion by the simple refreshing of its margins. Should the surgeon fall into this error he will cripple the connecting part above, and undoubtedly have the marginal notch.

CASE V.—Teresa S., aged two months, was admitted into the City of Dublin Hospital, under my care, in November, 1874, recommended by my surgical dresser, Mr. (now Dr.) Finucane, suffering from single fissure of the lip almost in the median line, but slightly to the right side, also a cleft in the maxillary bones, where the left premaxilla had not joined to the corresponding superior maxilla. The child was irritable and cross, and had much difficulty in taking nourishment. On the morning of the 14th November, 1874, I operated, having rolled the child in a sheet, as in the preceding cases. First I detached the gum from the sides of the cleft in the maxillary bone and freshened the edges, and drew the revived gums across the opening, and carefully brought the edges together with three points of carbolic catgut, having first bent the projecting portion of the bone toward the left side. I now placed the arterial compressors on the sides of the lips far from the cleft; and, separating the soft structures from their bony attachments, I cut the edges of the cleft with the scissors, holding the portions to be severed in a toothed forceps. Not a drop of blood was lost, save the small quantity that wept from the gums before they were brought together. I now carried a needle from left to right through the labial cleft, close to the red margin, about three-quarters of an inch from the edge, and passing through all structures save the mucous membrane, was brought out at the opposite side at a similar distance. Two other needles were introduced in like manner, and silken suture carried round each point, and afterwards from one to the other. Plaster was next applied, after the manner I have mentioned in the other cases. Never did parts come more exquisitely together than in this case. A mixture containing one-grain doses of bromide of potassium was ordered to be administered. The child soon fell asleep, and on waking, in two hours and a half after the operation, took its nourishment greedily and with much improvement, compared with the way it was able to do so before.

On the 15th November doing well; the bromide mixture most suitable, and seems to appease the irritability of the child. On the 16th still



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going on favourably. On the evening of the 17th I removed the needles, eighty hours after the operation, having first oiled their extremities and placed the child under the influence of chloroform before their withdrawal. Small pieces of plaster were put across the lips. On the day after but one fresh strips were readjusted. The sutures which had remained after the needles came away. It was most gratifying to witness the result; nothing could be more admirable. The union was perfect throughout; the red margins were as if welded together where the union had taken place, as shown in Plate 5.

On the 11th of January, 1875, six days after the child left hospital, I received a letter—part of which I quote—from her mother, expressing her thanks for the treatment, “and for the very successful operation you performed on her. I did not expect it could be ever brought to such perfection. The child is getting on very well.”

CASE VI.—Mary M., aged three years, recommended by my friend, Dr. Ebbs, was admitted into hospital, under my care, on the 6th December, 1875, suffering from double hare-lip of a most aggravated form, with projecting intermaxillary bone attached to the vomer, and thrust towards the right side containing the central incisors; the right portion of the nose was pulled down and depressed, and the tip carried downwards with the bones; the soft palate was perfect, and the hard, save just behind the opening made by the protruding ossa incisiva. A more complicated case cannot be well imagined—the labial fissure admitting the width of two fingers; the central soft portion was small, and freely attached to its osseous relation; the middle bony piece was about one inch long, in width three-quarters of an inch; the vomer was much expanded, and thickened where it joined the intermaxillary bones; when she drank, the fluid ran out of the mouth at the sides.

On Tuesday, the 14th December, I operated as follows:—The child being rolled in a sheet, and the legs tied together, was placed on the operating table. I seized the fleshy middle portion, and quickly detached it from the intermaxillary bone; and next raised the margin of the gums from the maxillary and intermaxillary bones, bending back the protruding ossa incisiva with the forceps invented by Mr. Butcher for that purpose, and pictured in his great work. I previously had cut a wedge from the thickened vomer, close to its junction with the intermaxillary bones, with the forceps pictured in Plate 15. An intercouscous suture

held firmly the bones on each side; the edges of the gums were kept together by interrupted suture. Now seizing the left portion of the lip, near to its inferior red margin, I raised it, and with a narrow-bladed scalpel directed it upwards, keeping close to the bone. The same procedure was adopted on the right side. There was smart hæmorrhage from the central piece beneath the soft structure, which I had considerable difficulty in arresting—indeed the vascularity of this part was so increased that there was a general weeping, which I eventually stopped by points of heated wire. I next cut the sides of the central piece, suiting it for a column, and then the margins of the lips with one stroke of the scissors; an assistant compressed the facial artery, standing behind the patient. There was a burst of arterial hæmorrhage, which was quickly controlled, and I rapidly proceeded to adjust the parts.

Piercing the upper portion of the left with a long needle, I traversed all its structures except the mucous membrane, passing the needle through the lower pointed extremity of the central piece, which I carried back to form a column for the nose. Continuing the course of the needle, I projected it through the right side, about an inch and a half from the cut surface, same as at the point of entrance. Great care was taken not to drag or depress too much the central portion, in dread of pulling down the nose; a second pin was introduced lower down, and a third at and close to the red margin. Silken suture was now carried round each needle separately, and a point of interrupted suture was put between the middle and lower needles. The entire was brushed over with collodion, and narrow strips of plaster placed between the needles, and a broad piece (coneave) brought forward from one malar bone to the other beneath the chin. This child suffered much from the shock of the operation, which was a severe one. She collapsed on the table, and I had to adopt the most active measures to restore her. Nutritive enemata were administered, her feet were elevated, mustard sinapisms applied over the heart, friction to the body, and brandy and water in teaspoonfuls poured down her throat. It was not for three hours after the operation I considered it safe to remove her from the table she was operated on. She then got some milk and brandy, with a few drops of laudanum, and fell asleep. At 7-30 p.m. of this evening she was hot and feverish; pulse 150; temperature 101°. There was no undue tension or swelling of the parts, and she partook of more than half a cupful of milk—a few drops of laudanum being again administered.



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15th.—Had a quiet night; pulse quick, 140 per minute; child irritable; parts greatly swollen; both eyes closed, and ecchymosis under left; drank milk and beef-tea during the night, and a few teaspoonfuls of wine and water. Ordered two grains of calomel; beef-tea and milk continued, and laudanum in mixture, with bromide of potassium in suitable doses. A cold lotion was applied over her eyes and nose; passed a quiet day, and took nourishment. Bowels acted on during the night twice; swelling of face less; right eye open; not so irritable; taking nourishment well; great tension on middle needle, in consequence of which I gave the child a few whiffs of chloroform, and removed the needle, having cut the suture and introduced another, readjusting fresh silk around it.

17th.—Much improved; left eye open, ecchymosis less; not so irritable; temperature this evening, 99° F.; mixture of opium and bromide of potassium continued.

18th.—Passed a good night; slept well, and took nourishment at intervals. On this day, at 12 o'clock, I placed the child under chloroform, and having oiled the end of the needles I withdrew them with a rotatory motion—first the lower one, then the middle, and then the upper; and as I withdrew each needle I took the precaution to adjust a piece of plaster, not waiting till all the needles were withdrawn.

19th.—Doing well.

20th.—I readjusted the plaster; the silken suture fell off; I removed the point of interrupted suture; union was complete and perfect throughout; the central piece had beautifully united, forming a columna for the nose, which duly elevated; and the red margin of the lips was accuracy itself, as shown in Plate 6. All was healed but the mark produced by the pins. The two points of interosseous suture were removed the day after. The central bony piece was fixed and firm.

The child left hospital on the 26th January following.

CASE VII.—John O'C., a well-grown child, aged five months, recommended to me by Dr. Finucane, was admitted into the City of Dublin Hospital on Oct. 8th, 1877, suffering from single hare-lip on the right side, with cleft in the maxillary bone of same side, and also cleft hard and soft palate. The fissure between the divided lip was more than an inch in width; the marginal portions being much thickened, the nose was terribly distorted; the right nasal ala was pulled over to the same side, as well as the tip of the nose, whereas the left ala was much

widened, spread, and flattened. The separation in the maxillary bone was not more than three-quarters of an inch. When milk was administered to the child, a large portion of it passed through the fissure back, and not infrequently regurgitated through the nose.

On the 16th October I operated, preparing the child in the usual manner. I proceeded to detach the gums from the edge of the gap in the maxilla, and freshened their margins. Then with a strong forceps I bent the left projecting portion of the bone towards the right side, and with two points of interrupted suture retained the gums; across the opening I now applied the arterial compressors, and seizing the lower margin of the lip at the right side in a toothed forceps, I rapidly freed it from its osseous attachments, keeping very close to the bone, freeing it well beyond the level of the depressed ala depicted in Plate 7. I then freely loosened the left side from the maxilla, keeping, as before, close to the bone, but did not separate it to such an extent upward, and then cut the septum, taking a small wedge-shaped piece from it to allow the nose to elevate. All was now completed but to remove the edges of the lip, which was quickly done by one stroke of the straight scissors. Not a drop of blood escaped from the coronary arteries, so perfectly adjusted were the compressors. I now approximated the sides, passing the lower needle first from left to right, entering it about three-quarters of an inch from the fissure, carrying it through all structures but the mucous membrane, causing its exit to be at a point corresponding to and opposite its entrance. The second or middle needle was similarly introduced, but the third was entered from right to left; entering it on a plane above the level of the right nostril, now partially raised through the cutting of the septum and the liberating of the soft parts, causing it to protrude just below the left ala; this plan effectually restored the nose to the position of which it was deprived by nature's freak. Both nostrils now corresponded. Twisted suture was carried round the needles separately, commencing at the lowest. The arterial compressors were removed, and then strips of adhesive plaster brought over the intermediate spaces. A small piece was placed across the nose to correct the action of the pyramidalis and levator nasi muscles, and not to allow the lip to be dragged by the nose elevated by the cutting of the septum. The entire was painted over with collodion, and the large piece of plaster already described passing beneath the chin from one malar bone to the other, concave forwards, completely controlled the muscles. It was most satisfactory

to witness the exquisite manner in which the parts came together, and the complete avoidance of any chance of an unsightly notch at the prolabium or red margin by the accurate position and carefulness with which the lower needle had been introduced. The child was now removed to its ward, and a suitable dose of Dover's powder was given, mixed with a little sugar; it soon fell asleep, and in a few hours awoke, partook of some warm milk, and again went to sleep.

17th.—Parts a little swollen; no undue tension; ecchymosis under right eye, which is partially closed; child refusing food; very irritable. Ordered—

R. Calomelanos, gr. i.

Sacchari albi, q. s.

Ft. pulv. statim sumend.

R. Bromidi potassii, gr. viii.

Syrupi, ʒi.

Aquæ fœniculi, ad. ʒi.

Ft. mist. cap. coch. parvum quartis horis.

Eye to be fomented with sponges wrung out of warm water.

18th.—Bowels have been well acted on; child slept, and is taking nourishment; ecchymosis better; can open eye to full extent.

19th.—Progressing favourably.

20th.—I placed the child under chloroform, and removed the needles with a rotatory motion ninety-six hours after operation, having first oiled their ends; fresh plaster was adjusted, and those portions across the upper lip painted with collodion.

On the 21st the plaster was again removed; the silken ligatures which, as usual, remained, dropped off; the union was most satisfactory; the elevation of the nose was all that could be desired; one nostril was not more spread than the other; both corresponded. The child left hospital on the 3rd of November. So completely did aided nature effect a cure, that scarcely by minute examination could the place of joining be perceived. In eleven months after, when I heard of this child, I was told there was no mark whatever to indicate that hare-lip had existed.

CASE VIII.—Mary C., aged ten months, a native of Clare, born of healthy parents—no history of deficient family development—was admitted into hospital, under my care, on 26th September, 1874, suffering from single hare-lip on the left side, and separation on the same

in the superior maxilla, with eleft hard and soft palates. The tip of the nose was dragged down towards the right side of fissure, while the left nostril was pulled towards its own side and flattened nearly level with the check. A more hideous deformity can scarcely be imagined. The child usually remained with its eyes half open, and had a pained and distressed appearance, as if conscious of its affliction. When it partook of nourishment the fluid regurgitated through its nose and flowed back through the sides of the mouth. Notwithstanding this it was a well-nourished child. On the 13th of October I operated after this wise:—The child having been rolled in a sheet, sitting on the knees of an attendant, an assistant steadied from behind the head, I detached the mucous membrane from the edges of the divided bones and stretched them across the osseous structures, bending, however, the right portion of the maxilla to the left side with the forceps before mentioned. I now applied my arterial compressors as heretofore, and seizing the right side of the lip in a toothed forceps, I rapidly detached it, keeping the knife closely applied to the bone. I adopted the same course on the left portion, and then passing my small cutting forceps under the nostril's tip and a little to the left side, I was enabled to cut the vomer, and finally remove a piece from the cartilaginous septum. This accomplished all I could wish for respecting the elevation of the nose. With two sweeps of the curved seissors, seen in Plate 15, I freshened the edges of the lips and quickly brought them together, as in the other cases. I entered the upper needle first, carrying it from left to right, coursing on a plane a little higher than the left nostril, entering it about three-quarters of an inch from the eleft, and carrying slightly obliquely downwards, I caused it to emerge just below the right nostril, at the same distance from the freshened edge. The lower needle was next introduced, one inch from the edge, and traversing all structures but the mucous membrane, passed through the opposite side, its point of exit being the same distance as that of its entrance. One more needle between the upper and lower sufficed, and silken ligatures were cast round each needle and the ends removed. Strips of plaster passed in the interspaces, and the entire was painted over with collodion, the large piece of plaster being applied to steady the entire facial muscles. The child was removed to its ward, and the sedative, such as I order in these cases, given, it quickly fell asleep, and waking in some three hours after, partook of warm milk and barley water, and slept again.



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14th.—Child slept well during the night, partaking of milk and barley water whenever it roused.

15th.—Strips of plaster readjusted, and painted with collodion; no undue swelling or tension.

16th.—On the evening of this date I removed the needles, seventy-eight hours after operation. I put the child under ehloroform before doing so.

On the 18th the suture came away; the line of union was beautifully even; the lower red margin was in perfect apposition, and all that could be desired. The nose had elevated to the position intended for it normally; the entire countenance of the child had changed; the distressed appearance left it; the eyes, before half-closed, were now widely opened; as if by intuitive knowledge it was aware that the deformity it suffered from was cured. Nor was this all—the milk no longer flowed from the sides of the mouth, nor regurgitated through the nose. Plate 8 admirably demonstrates the condition of the child before and after the operation. She left hospital in November, 1874.

CASE IX.—B. R., aged three months (recommended by Dr. D. Charlton, now of the Royal Navy), was admitted under my care on the 27th August, 1877, suffering from double hare-lip, with protruding intermaxillary bone. The separation went into the nostril on the right, which was much flattened and spread over the cheek of the same side, while on the left it did not pass into the nostril. The intermaxillary bone protruded beyond the margins of the lateral soft structures. There was not any division in the palate. I examined into the history of this case, which to me did not reveal why this child, the offspring of well-formed parents, whose other children were perfectly healthy, should be thus afflicted. On the 18th of September, the child being rolled in a sheet and placed on an attendant's lap, its head resting against the left of the chest and steadied from behind, I proceeded to operate; and first, detaching the central fleshy lobule from the protruding bone, I bent the latter back with the forceps mentioned in the preceding case, having previously detached the gums from its edges, and, freshening those on the maxillary bones, brought them together with suture. Then I freed the lateral soft structures from their osseous attachments, separating the right side higher up than the left, to assist in allowing the nostril to rise. I then cut through the septum narium with one stroke of the scissors, in order that the nose should elevate. The arterial com-

pressors were next applied, and seizing the left portion of the lip in a toothed forceps, with my own scissors I quickly cut off the amount of tissue necessary. The right side was treated alike; and next the central fleshy piece was hooked by a tenaculum, the edges refreshed, and the parts brought together with fine needles, the upper one being first introduced from right to left, going a little higher than the edges of the much-depressed nostril, and passing out on a plane lower than the left in its passage. Catching the under tip of the central fleshy piece which formed the columella, a turn of silk was now passed round this needle, and the compressors being removed, the lower needle was introduced about three-quarters of an inch from the edge; traversing all structures save the mucous membrane, it pierced the opposite side, the point of exit being the same distance from the edge. One other needle between the two already mentioned sufficed to bring the parts into perfect apposition. They came together as if adapted by nature—no unseemly notch marred the appearance of the marginal portion, the nose elevated to its correct position, and the right side rose to be exactly even with the left. Strips of plaster were next carried between the needles, and the large piece before alluded to passed beneath the chin. One more strip went across the nose to limit the action of the muscles, and then the child was taken to bed. An anodyne, after my habit, was administered. Sleep was soon procured; and the child, waking in some few hours, partook of milk previously heated.

I need not further relate the case, save to say that the needles were withdrawn on the 22nd of September with the usual rotatory motion—the child first being put under the influence of chloroform—being ninety-six hours after the operation. Plaster as before was carried across the lip from one side to the other. The suture round the needles came off on the 23rd, when the plaster was readjusted. The child left hospital on the 6th October, cured of its deformity, the symmetry of the nose restored, and the malformation of the soft and osseous structures of the mouth repaired and perfected.

CASE X.—Michael F., aged one month, a delicate child, was admitted into the City of Dublin Hospital, under my care, on the 22nd February, 1878, recommended by Dr. Borthistle. He was badly nourished, pale and anæmic, and suffered frequently from diarrhoea. He was afflicted with single hare-lip, the parted edges being much thickened and the



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nostrils widely spread over the cheeks; there was also a considerable separation in the osseous structures towards the right side, the intermaxillary bone being not united to the maxilla of that side. The deformity was revolting, added to which there was a cleft in both the hard and soft palates—the mouth and nostrils being in one cavity. The child was unable, from the extensive deformities mentioned, to partake of nourishment. Sometimes regurgitation took place through the nose, again it would dribble from the mouth, and not unfrequently he coughed it back; as if for want of the guiding influence of the uvula the fluid did not take the right and indicated course. It was evident that the child was in a most unfavourable condition for operation, and yet it was a nice point to decide whether there could be much chance of improvement with the faulty way nutrition would be carried on. After some consideration I determined to wait, and devising a well-regulated regimen, in which chicken-broth took a large share, I was thus enabled to get the child, by the 10th of April, into a much stronger state of health; and on the 25th of April, more than two months from the date of admission, I operated in this manner:—Being prepared as the other cases, rolled in a sheet, thus controlling the movements of its arms and legs, and seated on the knees of an assistant, its head being steadied from behind, I separated quickly the gums from the bones at the sides of the osseous cleft, freshening the edges. I drew them together by means of catgut suture, having first bent the prominent bone to the right side, through which I passed, with a suitable needle having an eye in the point, a silver-wire suture, which also penetrated the maxillary bone, and with a strong forceps notched the vomer. The compressors being now applied, I detached the soft structures from the maxillæ, carrying the knife high up by reason of the extensive flattening of the nose, and the wideness of the cleft keeping its edge close to the bone. Now, grasping the right margin of the lip in a toothed forceps, with the scissors I revived it, taking off about quarter of an inch, and making certain to go beyond that portion of the under red margin which is slightly turned outwards, and which, if not properly and sufficiently removed, is one of the causes of the much-dreaded “notch.” Similarly was the left side treated; and now the lower needle was introduced through all structures save the mucous membrane, from left to right; a second a little higher up, and the third just below the nostrils. Suture of silk was applied round each needle, and the parts almost adjusted themselves, so accurately were they

gauged. Small pieces of plaster were carried between the needles, the points of which had been cut with the pliers, and the suture was painted over with collodion; the large piece of plaster, modelled as before described, kept all the facial muscles at rest.

The child was now given in charge to its mother, who had cared and accompanied it to hospital. All progressed favourably. He was able to take his nourishment better, when—two days after the operation—the mother sickened, shivered violently, and the next or third day an erysipelatous blush appeared on her forehead and face.

Great was my apprehension lest the child should be attacked. Delicate from birth, never able to suck, improved by its stay in hospital, and careful line of nourishment laid down, only now sufficiently strong at all to admit of operation—surely, if attacked by erysipelas, not only must the wound open but probably slough, and the vital powers of this fragile infant succumb to so dire and destructive a malady.

The first and immediate course was the isolation of the mother; for although the handing over of the child to a stranger tended to retard its progress, the least of two evils had to be adopted. I ordered a suitable dose of calomel to be administered, good chicken-broth, milk, with small quantities of whisky, and a mixture containing bromide of potassium.

On the fourth day after the operation there was some slight redness at the site of the central needle, which I removed, and reapplied plaster over the part it traversed—oil, with the watery extract of opium, being smeared round the lip. On the next, the fifth day, I removed the under and upper needles, fully expecting the entire would open out and that no union had taken place, but, on the contrary, to my great gratification, there was very perfect union both above and at the red margins. But in the centre, where I had removed the needle, and where the red blush appeared, there was a small aperture which I expected would have healed by granulations; but failing to repair after this manner, I freshened the edges in the little central opening with a fine tenotome, and introduced one point of interrupted suture. I had previously taken out the interosseous wire. In three days this pin-hole foramen, so to speak, completely closed.

The recovery was excellent, and in May, 1878, the mother and child left the hospital. The condition of the child, then about four months old, is well and accurately shown before and after the operation in Plate 10. It would appear as if there was a slight notch from the representa-



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tion, but such did not exist; it is only an appearance due to the pursing of the child's mouth when the picture was taken, for the red margin was perfectly even throughout.

CASE XI.—Herbert R., first admitted in November, 1877 (recommended by my friend, Dr. Whittaker), then only one month old, a delicate-looking child, suffering from single hare-lip on the left side, with maxillary cleft on the same, with much flattening and spreading of his left nostril. There was no difficulty experienced by the child in taking its nourishment from a bottle, with which it was entirely fed. I therefore determined, on account of his weakly state of health, not to operate then, but to wait till a more favourable opportunity, when the child was older and stronger. He was discharged.

The mother and child were re-admitted in January, 1878. Plate 11 represents the child accurately at four months old, and the amount of deformity alluded to is graphically depicted.

On Tuesday, the 19th February, I operated in the following manner:—Rolling the child in a sheet, as in the other cases, and placed in an attendant's lap, its head being steadied from behind, I separated the gum from off the bone at each side of the osseous cleft, and bent backwards and towards the left side the protruding right maxillary, then drew the edges of the freshened gum together with interrupted suture. I now rapidly separated the soft structures from the maxillary bones, detaching it more on the left, on account of the flattening of the nostril, than on the right side, keeping the knife very closely applied to the bone. This being done, I applied the arterial compressors and cut the margins of the lips. Not a drop of blood escaped from the coronary arteries, so perfect was the compression. I now introduced the upper needle from left to right on a plane higher than the nostril and about one inch external to it, bringing it out at the opposite side on a slightly lower level. This had the desired effect of elevating the nose, nor did the septum require to be notched. The lower pin was next introduced one inch from the refreshed surfaces, and at the margins the coaptation was simply perfect, and the red prolabium came beautifully even, as if adapted by nature herself. A coarse silken thread was carried independently round the upper and lower needles, the arterial compressors were now removed, and a central needle passed across the fissure; a twisted suture drew this middle portion into apposition. I next painted over the suture with

collodion, and applied the plaster between the needles, as described in the former cases, having first cut off the ends of the needles, and then the large piece encircling the chin was adjusted. Before the child left the theatre it was observed to breathe a little rapidly; it had only just returned to its ward when it was seized with a fit. I thought this might have been from want of entrance of air and not having the same wide aperture to admit of inspiration. I therefore depressed the lower jaw; but, no, this was not the cause. Its eyes turned up, its thumbs turned into the palms of its hands—it had convulsive spasms. I saw there was no chance of saving its life but the removal of the needles and the undoing of all the work so beautifully adapted. With the assistance of Mr. Patten and Mr. E. White, then residents, I removed the plaster, applied the arterial compressors to prevent hæmorrhage, cut the ligatures, and withdrew the needles. Cold effusion was applied to the child's head in moderate but efficient quantity; it soon was quite restored, cried lustily, and sucked some milk through the tube of its accustomed bottle. Thus I left the little patient, and ordered it grain doses of bromide of potassium, and some whisky in its milk. In six hours after I returned, and found the child so well that I determined to bring the parts together; no blood had been lost, the compressors controlled the vessels since as during the operation. Now, having a fine pulse, I removed the compressors, but there was no hæmorrhage; the vessels were sealed, but on rubbing the edges with a sponge they were soon refreshed, and the blood gently flowed from the raw surfaces. I reapplied the needles in the manner before described, also the plaster, and in addition introduced two points of interrupted suture—one at the red margin, the other between the lower and middle needles. Not a bad symptom followed, the needles were removed in eighty hours after the operation, and the child discharged perfectly cured on the 14th March, 1878.

In the numerous cases I have operated on for hare-lip I never, before or since, have seen convulsions follow the operation. I am aware that Sir Astley Cooper, Mr. Syme, and Mr. Abraham Colles, thought such common, and for this reason did not consider too early operation advisable, whereas we have the testimony of the late Sir William Fergusson and that of Mr. Butcher as never seeing convulsions caused by the operation of hare-lip. As I have before stated, this is the only time it occurred in my practice.



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CASE XII.—M. B., aged four months, was admitted into the City of Dublin Hospital in May, 1876 (recommended by my friend, Dr. C. Lyster, F.R.C.S.I.), suffering from double hare-lip, with protruding intermaxillary bone; the central lobule being attached to the nose, the intermaxillary, being unusually large in width, pushed forward by a thickened and expanded vomer. The nose was not much flattened—a little more, however, on the left than on the right side. The soft palate was separated at its inferior part for about half an inch upwards. Save for the mouth deformity the child's face was peculiarly attractive. There was a great depth of forehead, lightly pencilled eyebrows, with bright eyes of unusual lustre, which, even at this tender age, flashed with response so characteristic of intelligence and genius. No hereditary cause could be ascertained; no ancestral deformity could be traced; no external reason assigned, during pregnancy's period, why development should have been arrested—why Nature's caprice should thus be indulged, and parts distorted from their normal position, rendering this otherwise handsome child an object of pity and distress. Although it is not my custom to operate on clefts of the palate sooner than the age of thirty or thirty-five months—there being obvious reasons for this course—yet the cleft was so small, and the parts even of themselves fell so closely together, I determined at the operation of the mouth to close the palate.

On the 13th of June, having prepared the child by rolling it in a sheet, similarly to cases already described, I had it held by an assistant. Being seated on a nurse's lap, the mouth was kept open by means of a gag, the tongue at the same time being depressed. I now passed a suture of silk through the edge of the left side of slit palate, and then another through the right, and drawing the left portion forward I cut off with a long curved knife, such as I am in the habit of using, sufficient of the edge, acting similarly on the right side, and then brought the margins together with catgut suture. There was no tension whatever, and any slight hæmorrhage there was ceased on the approximation of the sides. I now proceeded to rectify the mouth, and first acted on the central piece, dissected up the soft portion, or, as some improperly call it, the prolabium, then I notched the vomer with the cutting forceps I use, and shown in Plate 15. It was obvious, from the over-development and great width of the intermaxillary bones, they would not fit in the opening between the superior maxilla, so I took a small piece off each side with the same forceps, to allow this central osseous structure to fill up the gap, and

now I cut it partially at its upper part with the instrument so ingeniously contrived by Mr. Butcher for that purpose (and shown in his "Surgery"), and bent it into the space now ready to receive it—the bending being facilitated by the previous notching of the vomer. I next dissected off the gum from the edges of these adjoining structures on each side, and having pared their margins, sutured them together. A silver wire interosseous suture being introduced on each side, my arterial compressors were next applied over the coronary vessels, and the soft lateral structures separated from their bony attachments to sufficient extent—being detached more on the left than on the right side—to assist the elevation of the nose. I seized the margins of the left side in a toothed forceps, and quickly, with the curved scissors, removed more than quarter of an inch, making sure to get well beyond the turn and eversion of the lower red marginal or prolabial portion; thus, also, was the right side treated. The central soft structure was now seized and its lateral edges removed; being cut V-shaped, its lower extremity was finely pointed. This structure was destined to form the columna of the nose, and the pointed portion fitted neatly, being traversed by the upper needle, which was entered on a plane higher than the nostril of this side, and emerged at an equal distance from the cleft on the right side. The lower or red marginal needle was now introduced through all structures but the mucous membrane. The compressors were removed, and a silken suture cast round the lower needle. The edges came into beautiful position. One more needle was passed from the left side above the lower, and silk cast round it. As may be observed, no attempt was made to draw down the central soft piece, in case of depressing the nose; it fell back into the place for which it was prepared. Collodion was now applied over the sutures, and the ends of the needles snipped off with the pliers. Strips of plaster were carried between the needles which, in their turn, were also coated with collodion. A small piece was placed across the nose to prevent the little central lobe from being displaced by the action of the muscles. The dressing was thus finished and the child sent to its ward. When the plaster, attached from one malar bone to the other, was adjusted, and which has already been alluded to, half a grain of Dover's powder was then administered. Sleep soon overtook the child; it remained composed for three hours. On waking, it took some milk, and was in a very quiescent state. He had a quiet night, rousing only to partake of nourishment.



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14th.—Nothing could be more satisfactory than the condition of the parts operated on. All progressed favourably, and on the 17th June the needles were removed with the usual rotatory motion. The union was complete, the left side of the nose elevated, and exactly corresponded to the right; the columna was perfect, the red margin of the lip was even to exactness. I placed strips of plaster across the mouth to steady the parts.

On the 20th I removed the interosseous suture. The child left hospital in July, perfectly cured, a triumph of plastic surgery, and is accurately depicted, before and after the operation, in Plate 12.

CASE XIII.—William M., aged nine months, from the county Cavan, was admitted on the 28th day of February, 1876, suffering from double hare-lip, complicated with intermaxillary cleft, but there was no protrusion whatever—merely a want of union on each side to the maxillary bones. His nose was widely spread and much flattened. When he laughed or smiled the deformity was dreadfully increased. This was a well-nourished child, and had an unusual quantity of light fair hair. Nothing can show better the exact condition of parts before and after operation than Plate 13.

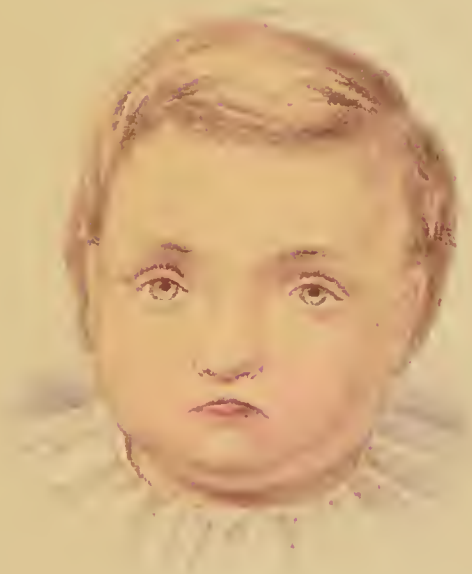
On Tuesday, the 14th March, having made the usual preparations, and the head being steadied, as I have described elsewhere, I operated before a large class of students in the Theatre of the Hospital. Commencing first at the central soft slip, I freely detached it from the premaxillary bones, and now raising the gum from the corresponding margins of the maxillary and intermaxillary bones, I freshened their respective edges, and brought them together by points of interrupted suture. There was no occasion to interfere with the middle bony piece; it lay between the maxillary bones evenly. Next, with a narrow-bladed knife, and keeping close to the bones, I separated the lateral soft structures, and, as the nose was much expanded over the cheeks, I detached higher than the level of the nostrils. Having seized the extremity of the centre piece with a tenaculum, and removed sufficient off the sides, nicely pointing its inferior angle, I now applied my arterial compressors, and freshened the edges of the lateral soft portions, taking care to go well outside the turn of the lip which always exists at the lower red border, and I now brought the parts into apposition, having first notched the septum to allow the nose to slightly rise at its tip, and not to give it a pinched appearance by reason of the compulsory narrowing of the

widened nostrils. The upper needle first passed from left to right, entering about three-fourths of an inch from the cut edge, and traversed the pointed extremity of the central fleshy slip forward and destined to make the nasal columna. Next the lowest needle, or that at the red margin, was introduced at the same distance from the edge, its point of exit corresponding, and then the middle needle in the same way. Twisted suture closed the gap, not from one needle to the other, but from each one separately; collodion over all, and plaster, as already described, with an additional piece over the nose to prevent its dragging unduly on the middle slip. The arterial compressors had been removed when the lower suture was applied, and the ends of the needles cut before the child was sent to the ward.

On the 15th the little patient was progressing favourably; not a bad symptom had followed. The needles were removed seventy-eight hours after the operation. The formation was perfect; the union as complete as if nature herself had performed her proper functions. The child left hospital in April without deformity, a goodly specimen of the science and art of surgery.

Double Hare-lip, with extensive separation of the soft structures; cleft hard and soft palate; flattened, expanded nostrils; absence of intermaxillary bone, removed in an attempt to rectify the parts and bring them together in early childhood. Complete union and little deformity, by a modification of the operation called Malgaigne's.

CASE XIV.—Ellen Q., aged twenty-six, a native of Kilkenny, was recommended to the City of Dublin Hospital, under my care, by my friend, Dr. Lyster, who saw her for the first time a few days before her admission, 15th October, 1878. She suffered from double hare-lip of a most aggravated form, together with cleft hard and soft palate, the intermaxillary bone having been excised in an attempt to restore the parts to their normal condition at an early period of life. This patient was in a pitiful condition, scarcely articulating to be understood, and in her attempts to be so would repeat again and again the same sentences. It was distressing to witness her deplorable state; and in her often futile endeavours to make her expressions intelligible the deformity increased to an extent almost beyond realisation; the nostrils would expand and spread considerably more than shown in the drawing; the sides of the divided



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lips would open to nearly double the distance of their passive state, and then suddenly and almost spasmodically approximate again. The mouth and nose were in one large cavity. Before her admission she lived as much a recluse as possible, avoiding every society, not wishing to be noticed, nor to enter into pursuits of any kind. There was no family history of existing deformities; her father and mother were healthy. To endeavour to approximate these already mutilated and widely-separated lips was to undertake an operation of no little gravity and difficulty. The central osseous portion being gone, there was no support for the lip; the middle fleshy lobule diminished and cut away; the cleft, always large, made larger by a previous unsuccessful operation. Such were the difficulties. No pressure laterally and forwards could bring the parts even tolerably close. For several days I had strips of plaster drawn from one side of the face to the other, across the cleft, to accustom the parts, as it were, to be pulled forward; and having given the case due consideration, I determined to adopt Malgaigne's operation in principle, and to make what modification I might think necessary; and if the tension was too great to relieve it by two lateral vertical incisions beyond and external to the fissure. The palate, both hard and soft, was so widely apart that no operative procedure could restore them.

On the 26th November, having her seated in a chair, with a board placed across her thighs, which was fastened to the legs by means of a bandage passed through holes in its ends, and her hands being also controlled, an assistant steadied her head from behind, while she leant back against him. I now freely detached the soft structures from their attachments to the superior maxillary bones, and then I applied my compressors as far as possible from the edge of the fissure. Now standing behind the patient, holding in my left hand a tenaculum which had pierced the inferior portion of the right side of the lip near the red border, I cut with my scissors from above downwards a portion of the lip, but did not detach it below. The same was done on the opposite side; and now the edges of the central piece were removed, and the nasal septum notched. That portion of the lip which I had cut down on the left, being freshened on both sides, I carried obliquely up to meet the middle fleshy slip; and that portion cut from the right side to its free margin I carried across till it met the left similar portion, to which I mortised it, holding it attached by a fine needle and twisted silk. This right piece formed the lower margin, or what is

properly called the prolabium. I now passed a needle about one inch from the divided parts, on a level with the nostrils, from left to right, emerging its point at a like distance on the opposite side, causing it to travel through the central fleshy portion, but not at its apex or inferior angle, but higher up, for this was already joined to another structure, as mentioned; nor could it be utilised entirely for a columna, but had to be pulled a little down to help to fill up the large deficiency, notwithstanding that it might depress the tip of the nose. A silken suture was passed round this needle, the parts being first pushed towards one another by the hands of an assistant. A second fine needle was entered a little lower down, passing through the upper portion of the utilised paring of the left side, which I had joined to the middle piece by an interrupted suture; and a third needle was entered still lower, twisted suture being employed to maintain the parts with the assistance of four points of interrupted. The points of the needles were removed by a cutting pliers. The compressors were now taken off, having done good service, scarcely any blood being lost in this lengthened operation, beset with many difficulties. Narrow strips of plaster were carried between the needles, and painted with collodion; one small piece was brought over the nose, and the wide piece (cut concave forwards) brought from one malar bone to the other, passing beneath the chin. This effectually steadied the muscles and prevented their action. I had previously warned this patient of the necessity of remaining as quiet as she possibly could during the operation. It was astonishing the amount of control she possessed, undoubtedly influenced by her anxiety for success. She was removed to her bed directly after the operation, and partook of some feed milk through a bent glass tube. By this method was the patient fed on milk, cold beef-tea, and chicken broth. A hypodermic injection of morphia was administered at 9 o'clock, p.m. She passed a good night; indeed there was not any unfavourable symptom, and on the 30th November I removed the needles, with a rotatory motion, having first oiled their ends. The suture, as is the rule, remained attached after I took out the needles; and as far as could be seen union had taken place; plaster was applied as before, and the next day but one all was taken away, including the four interrupted silver wire sutures; the silk which had been cast round the needles fell off, and union was found to be most perfect. Strips of plaster were again applied, as well as the narrow piece over the nose, so that no undue drag might be put on the central portion by reason of the elevation of



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the tip, permitted and assisted to do so by the septum being nicked as before stated, until complete and firm union had taken place.

On 18th December the patient left hospital. The notes of the case were carefully taken by Mr. Augustus W. Woodroffe, B.A., my surgical dresser, a highly distinguished pupil. I quote his description, as being the most accurate I could give:—"The patient left hospital to-day, the parts having healed up beautifully; only a faint cicatrix, having somewhat the shape of the letter H, is observable; her nose is considerably raised, and her powers of articulating much improved. Her general health never suffered from the operation."

I have stated the method I adopted was a modification of M. Malgaigne's. Some, however, state he is not entitled to the credit of the operation that bears his name. M. Roux states it was originally done by Clemot, and Mr. Maurice Collis accredits it to Mr. Samuel Smith, of Leeds. Indeed, my procedure was partly Malgaigne's and partly M. Mirault's operation.

As I stated in the commencement of my paper I would record some of the most interesting cases of hare-lip from among the large number that have come under my care, and have also described the mode of operation necessary for each, I will now make some observations on the most advisable time for interference. Various, indeed, have been the opinions expressed as to the most suitable age for performing the operation. Mr. Liston says:—"I advise you to defer the operation till the first set of teeth come in, and I have good reason for adhering to such a rule. When the operation is undertaken at an early period there is often great difficulty; sometimes union does not take place, the parts turn out again, and the patient is rendered more deformed than in the first instance. When the features are enlarged somewhat you have more ground to work upon, you can put the parts neatly together, and you can almost answer positively for union taking place." "For my own part," writes Mr. Bransby Cooper, "I entirely agree with Sir Astley Cooper in regarding it unsafe to operate on infants before weaning; first, because, from their excessive irritability, they are totally unable to sustain any loss of blood; and, secondly, because after the operation they are rendered

incapable of sucking. Indeed Sir Astley Cooper has pointed out the frequency of the failures he met with in his own practice, in operating on infants shortly after birth. I consider the best time is soon after the child is weaned. It is then capable of receiving nourishment independently of the mother."

Dr. Houston was in favour of the third month after birth, and also Dupuytren, who thought the flesh of newly-born children too soft, and believing the needles would tear through it, and because of greater mortality than at a later or any other time of life.

Syme, believing convulsions of common occurrence from the operation, advised against operating immediately after birth.^a Chelius recommended the period of eight months; and only when the "wolf's pharynx" is along with hare-lip, and that the child could not suck, would he advocate the operation to be undertaken within the first six months.

Mr. South would not perform it till two years, and, if possible, would wait till the child was six years old. He thought early operations inadvisable, as the crying of the child tears through the adhesions, and an unseemly notch occurs in the lip. Lawrence, Rocea, Mestenhauser, and Sir W. Fergusson, prefer about the end of the first month. Dieffenbach advised the operation should not be performed till after dentition. Dubois, Malgaigne, Giraldes, and Abernethy advised operation soon after the birth of the child. Guersant says that in seven operations immediately after birth he had only one failure, whilst in the same number at the age of one month he had five failures. Professor Dubois, before alluded to, read a paper on the subject of early operation, at the Academy of Medicine, Paris, in the year 1845, relating seven cases that had come under his observation where the operation was resorted to successfully a few days after birth. Malgaigne and others have adopted like practice; also Dr. J. Mason Warren. Sir W. Fergusson, in his "*Practical Surgery*" (fifth edition), says:—"From all my reflections and experiences on the subject, I am more than ever disposed to recommend a very early operation. Most of my patients have been under three months old."

^a Principles of Surgery. 1842.

It would be impossible to lay down dogmatically any hard-and-fast rule as to the exact period for operative interference in every case of hare-lip. There are circumstances that may demand an operation immediately after birth. No matter what age the child may be, if it be in need of nourishment and deprived of such by the food running out through the fissure of the mouth or through the nose, I hold it is the duty of the surgeon to operate at once, and prevent death by inanition if possible; but, should such urgent indications be not present, and that I could select a period, I would choose from *three to six weeks after birth, and within three months*. The earliest period at which I have operated was twelve days old, and the latest twenty-six years; but that the operation can be undertaken at any period after a month is well exemplified in the few cases I have selected to record, and out of the entire number I have operated on I have been fortunate enough never to have lost a patient. I have not been able to see any objection to operate during dentition. I am aware that many writers direct this time to be let pass or to operate before it; but, unless there is great suffering and distress, which might be increased by an operation, I would not feel it was necessary to postpone. Of the advantage of early operative measures there can be no question. The child can take nourishment better. Many of my cases sucked from the mother with vast improvement, the needles still holding the parts together. Besides, at an early age the child is more manageable, and the structures are more amenable and more likely to approach their normal state, independently of many other obvious reasons.

Should the palate be split, the joining of the lips tends to its closure. This advantage has been alluded to by Mr. Butcher in his "Operative Surgery," page 655, and is clearly verified by Mr. Henry Smith, who refers to a patient of Mr. Bateman's operated on four hours after birth, at which time the palate was so split that the mother could put her fingers into it, but in three years after would only admit the edge of a sheet of paper.

I cannot understand how such an erudite and dexterous surgeon as Mr. Liston could have been so unfortunate as he records in his

results. Mine alone are sufficient to controvert both his and Mr. Bransby Cooper's objections to an early operation—as also Dupuytren's, who thought the flesh too soft for the needles. Nor can the fear of convulsions be considered a barrier, as stated by Mr Syme and Sir Astley Cooper. I have observed it but in one case (Herbert R., Case XI.), and, as there mentioned, it is unusual.

But there are cases which may require to be postponed, and that for a very long period. I allude to those cases of aggravated double hare-lip, with protruding intermaxillary bones, with cleft hard and soft palate. Supposing a surgeon meets a case of this kind, the child taking its nourishment tolerably well, it may be incumbent on him to postpone performing the necessary operation for a very lengthened period—even for several years—for there may not be *physique*; or, even if there is, and fair development, there may not be that vital force within the patient to withstand the shock of such an operation. Experience will now help the surgeon to decide whether the strength of the patient will be equal to the strain and to the demand upon it. Such is illustrated in Mary M., Case VI. Had that child been subjected to so severe a procedure as was necessary for the restoration of the deformity at an earlier age, the probability is she would have succumbed.

With regard to operation there are several results to be looked for—the most important indication is to join the fissure; but there are others, in my mind, not less important. It seems equally essential that the beautiful prolabial (red marginal) curve should be restored, the unsightly notch prevented, the fossa labialis formed, and the nose, whether distorted on one or both sides, restored to its proper position. Such results cannot be obtained by inexperienced hands, or by those ignorant of the anatomical relations of the mouth. Truly, surgical artistic skill is much required in this operation. I have not been able to appreciate or to see any advantages in the fanciful operations, such as Giraldes' mortise, M. Mirault's, Sédillot's, nor M. Henry's; indeed, they prevent the indications, as stated above, being accomplished, for the surgeon operating after their manner cannot possibly preserve the perfect curve of the red margin, nor can there be the most tension over the

ineisive fossa, so necessary to cause a slight protrusion at the lower border. Malgaigne's operation and its modifications may occasionally be necessary, but not to prevent the labial notch—it is not required for that purpose. If the lower needle is introduced after the manner I have described, and the edges correctly cut, no notch can exist, nor can it follow by the contraction of the cicatricial tissue, as stated by an American writer, if the marginal joining be perfect in the first instance.

Nélaton's operation adopted in Case IV., and there recorded, produces beautiful results; but in the majority of cases that will present the cleft can be closed and the symmetry of the mouth restored by cutting the edges from below upwards with the straight or curved scissors. I am not wedded to either, but there are cases where the curved would be very inapplicable, and too much substance might be removed. The ellipse made by the curve has many advantages, but in careful hands either instrument will procure excellent formation. Notwithstanding the examples given of the treatment of the central lobule and the protruding intermaxillary bone, I feel a few further remarks necessary.

In shaping the central fleshy piece some care is requisite not to leave any portion of the edge towards its inferior extremity uncut; it invariably suits for a columna for the nose, and has been fitted as such in the cases recorded; nor is it expedient to depress it much if not utilised in this way, as it only pulls upon and depresses the nose.

With respect to the intermaxillary bone protrusion, several methods of treatment have been advised by writers on the subject—excision or removal being the practice of some, as Sir William Fergusson and Franeo, bending it into the place it ought to occupy being the method used by others. There are those who condemn this latter plan—adopted by Messrs. Marjolin, Huguier, Butcher, Gensoul, and myself, with good success. Desault had favourable results from compression of the bone in eleven and eighteen days by a band fastened behind. Professor Léon Le Fort (*Bulletin Général de Thérapeutique Médicale et Chirurgicale*, 1878) advocates the removal of the bone. Breaking the pedicle he thinks dangerous as well as inapplicable, and fears breaking the cribriform plate of the

ethmoid bone. One tries, he says, to break the vomer by putting the weight on the intermaxillary bone, but at this point the vomer is very resistant, and one will be very much exposed to carry the fracture into its base or cribriform plate, and might thus fracture the base of the skull. Again, he thinks the bony tubercle brought backwards describes the arc of a circle too long, or, taking an oblique direction, directs the teeth behind, and the end of the nose, before flattened, is drawn back still further by pulling the tubercle, to which it adheres. Besides, what is the use of preserving? The bony tubercle bears only two incisors. Again, he says, another difficulty of intermaxillary—what to do with the fleshy slip at the extremity of nose.

The Professor comments on a case of Mr. Butcher's, and thinks the lamina that was broken must have been a very slender structure.

Professor Léon Le Fort, in thus writing, does not appear to understand that in the case he alluded to the bone was half cut through, the soft tissues being preserved before any attempt was made to bend back the intermaxillary. If this course is adopted and the vomer notched, or a triangular piece cut from it, as done by Blondin, it would be impossible for a fracture to be carried where he describes—the base of the skull. And even if the teeth should be directed backwards, that is no reason for removing the bone. The teeth can be removed, and the natural support still remains for the lip; but, I doubt not, this pernicious position of the teeth could be guarded against by mechanical contrivance. As for the nose being flattened, if the central fleshy lobule is correctly dealt with, and the septum, such cannot occur. Contrary to the Professor, I am of opinion that one of the most cogent reasons for preserving this osseous piece is because it contains teeth, and although invariably but two—the central incisors—the germs of the four incisors are in the intermaxillary bone, and the lateral incisors may develop.

No, this central piece should not be taken away. In almost every case it can be preserved, bent in the manner I have recorded, held there by interosseous suture, and interrupted through the gums as well. There is sometimes difficulty in penetrating this bone on

account of the teeth-germs, but this is not of frequent occurrence. I have never seen this bone remain movable when properly treated in the first instance; there is no occasion to make a separate operation for placing the intermaxillary in position, the soft structures can be operated on at the same time. So desirous am I to preserve this projecting bone that I have cut off portion of its anterior surface, which bulged too much forward, and its inferior, which came below the maxillary bones themselves. I saw a case of this kind two years after I had operated. The bone was firmly fixed; the teeth, as might be expected, were absent, but the lip was well supported, and the nose, which had been much depressed, raised to its normal position.

The form of suture I prefer is the twisted—a neat and long hare-lip needle, finely pointed—or the one used by Mr. Butcher. I do not believe the interrupted will hold the parts so evenly together—the nose could not be elevated so well, especially if only one side was depressed; there would not be the same firmness and support to the parts; the notch at the red edge could not be so well prevented; for, I repeat again, if the lower needle is correctly introduced there can be no “notch;” there is, then, no need of the interrupted point within the red margin. The shotted would have the same disadvantage. The quill is obviously objectionable. Yet all these forms, and many others, have had their advocates. As a rule the lowest needle should be first introduced—the marginal edge adjusted—but in many instances this cannot be followed, for it is more advantageous in much nasal deformity to begin above.

Silk or hempen ligature (I prefer the former, it is soft and adapts itself) cast around the needles hold the parts together. The entire can be painted with collodion; it keeps the secretion from the nose and all moisture from penetrating. Plaster, as I apply it, is always sufficient to give the additional support. I have used Hainsby's truss on one occasion. It is a useless instrument, and even with great care will get displaced. I have read of a similar instrument invented by Dr. Dewar, and studied the *rationale* of Louis's bandage for compressing and supporting the cheeks. None of these will ever supersede the plaster, or give the same even support.

I find from very accurate notes the average time I have removed the needles is ninety hours after operation. The best position for the patient to be operated on is, I believe, the sitting—much to be preferred to placing the child on its back, with its head between the operator's knees. The surgeon sees better the relation of parts, and can adjust them more satisfactorily. There is no danger of blood passing to the stomach and causing subsequent vomiting, or passing into the larynx, producing dyspnœa. To prevent hæmorrhage from the coronary arteries I devised the arterial compressors seen in Plate 15. In every case I have used them they fulfilled all their requirements. They stop hæmorrhage, thus rendering the hands of an assistant unnecessary for this purpose. Thereby the operator has more room, is entirely independent, and parts are not pushed from their place; the surgeon sees more easily the exact amount of deformity to be rectified; they do not interfere with the introduction of the needles; the cut edges are much drier when about to be joined; they steady the muscles—the zygomatici and levatores—which often act to the detriment of the operator just as the lip is being cut; they cannot relax—an assistant's pressure may.

Regarding the instruments to cut with, some select the knife, others the scissors. The French, influenced by Dubois, adopt almost universally the latter. I have found by comparison this instrument the best, and have added to those I use a sheath on the under-blade.^a This has many advantages. The operator can gauge exactly the amount of tissue cut; he can sever it in one stroke from the solidity of the under-blade; it cannot wobble from the increased width; there can be no contusion; the posterior edge of the lip cannot be bevelled; it acts as a support for the lip to be cut on; it gives it all the advantages claimed for the bistoury, and removes the objections to the scissors. I have used it in almost all my operations.

My best thanks are due to the Messrs. Forster, of Crow-street, for the trouble they have taken with the Plates accompanying this paper, and the accuracy with which they have been executed.

^a The instruments figured on Plate 15 were made for me by Messrs. M'Adams and Corcoran, surgical instrument makers, Dublin.